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THE SPECIES STATUS OF *HELIOTHIS ARMIGERA* (HUB.) (LEPIDOPTERA: NOCTUIDAE) IN ANDHRA PRADESH, INDIA ON THE BASIS OF AEDEAGAL CORNUTAL SPINES

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BHATTACHERJEE¹ reported that *Heliothis armigera* in India is comprised of three sub-species—*H. armigera hibisci* feeding on cotton and bhindi, and male moths possessing 11 aedeagal cornutal spines; *H. armigera sorghi* feeding on sorghum, maize and wheat, and male moths possessing 12 aedeagal cornutal spines; and *H. armigera armigera* feeding on gram and tomato, and male moths possessing 13 aedeagal cornutal spines. Later, Bhattacharjee and Gupta² described a new species on cotton as *H. rama* with 13 aedeagal cornutal spines. Vaishampayan³ discovered no such differentiation in *H. armigera* in Madhya Pradesh (central India) and reported it as a single species on all the host crops.

To clarify the taxonomic situation in Andhra Pradesh, the larvae of *H. armigera* were collected on sorghum, pigeonpea and chickpea and reared further in the laboratory to obtain moths. One more generation was bred from these moths in the laboratory on the same natural hosts. Aedeagal cornutal spines of 25 male moths of each reared and bred generations were counted under binocular by dissecting out the genitalia from abdomen boiled for 2 to 3 min in 5% KOH. The male moths obtained in light traps during different crop periods at ICRISAT Centre were also examined for the aedeagal cornutal spines.

The number of stout spines on the aedeagal cornuti of both the reared, bred, and light trap-collected male moths varied from 10–15, with 11–13 spines most common (tables 1 and 2). There also appeared numerous small spines in the vesica beneath these stout aedeagal spines. The moths varied in morphological characters including the wing expanse; the larvae of the same instars also showed colour variation.

This study reveals that the number of aedeagal cornutal spines in *H. armigera* is not constant, and vary more or less in the same narrow range with the host plants; and therefore, it should not be taken as criterion to name subspecies of *H. armigera* feeding on different crops, as has been done by Bhattacharjee¹.

Table 1 Percent of *H. armigera* male moths*, reared (R) and bred (B) on sorghum, pigeonpea, and chickpea, against aedeagal cornutal spine numbers, ICRISAT Centre, 1976–77.

Spines on aedeagal cornuti (No.)	Sorghum		Pigeonpea		Chickpea	
	R	B	R	B	R	B
10	0	0	16	4	0	4
11	4	8	36	36	16	20
12	52	40	20	36	56	52
13	36	40	20	8	24	12
14	4	12	8	16	4	12
15	4	0	0	0	0	0

Cumulative mean	12.5	12.6	11.7	12.0	12.2	12.1
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* = Twenty-five moths of each of the reared and bred were studied.

R = reared from the field collected larvae.

B = bred on the same natural host for one generation

Table 2 Percent of male moths with different number of spines on aedeagal cornuti, obtained from the light trap during crop seasons, ICRISAT Center, 1976–77.

Spines on aedeagal cornuti No.	No. of moths (%)		
	Jul.–Oct. ^a (n = 65)	Nov.–Jun. ^b (n = 98)	Mar.–Jun. ^c (n = 79)
10	7.7	9.2	5.1
11	23.1	31.6	34.2
12	46.2	32.7	32.9
13	20.0	23.4	21.5
14	1.5	3.1	6.3
15	1.5	0.0	0.0

n: No. of male moths obtained and studied

a: Crops available – groundnut, sorghum, and pearl millet

b: Crops available – pigeonpea, and chickpea

c: Crops available – rabi groundnut, sorghum, and weeds

We, further, got identified the species of *Heliothis* in Andhra Pradesh, India by sending the moths obtained from different hosts to Dr D. F. Hardwick, Entomological Research Institute, Canada. There were three *Heliothis* species in the lot namely-*Heliothis* (= *Helicoverpa*) *armigera* on almost all host plants, *H. peltigera* mainly on safflower and the weed *Acanthospermum hispidum*, and *H. assulta* on the weed *Datura metel*. It needs to be mentioned here that the generic name *Helicoverpa* coined by Hardwick⁴ for *Heliothis* has not been approved by the International Commission on Zoological Nomenclature, and there is a representation by Nye⁵ following a referendum among the participants of the "International Workshop on *Heliothis* Management" held in

November 1981, at ICRISAT, Patancheru, A.P., India, that the well established *Heliothis* spp names including *armigera*, *peltigera*, and *punctigera* should continue to be used.

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